10th Annual Meeting of the Bulgarian Section of SIAM[1]

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The 10th Annual Meeting of Bulgarian Section of SIAM (BGSIAM) took place on December 20 and 21, 2015 in Sofia, Bulgaria. The meeting was hosted by the Institute of Mathematics and Informatics, Bulgarian Academy of Sciences. The major international organization for Industrial and Applied Mathematics — SIAM traditionally provides financial support for the meeting.

The Bulgarian Section of SIAM was founded on January 18, 2007 and the accepted Rules of Procedure were officially approved by the SIAM Board of Trustees on July 15, 2007. The goals of BGSIAM follow the general goals of SIAM:

- To advance the application of mathematics and computational science to engineering, industry, science, and society;

- To promote research that will lead to effective new mathematical and computational methods and techniques for science, engineering, industry, and society;

- To provide media for the exchange of information and ideas among mathematicians, engineers, and scientists.

The role of SIAM is very important for promotion of interdisciplinary collaboration between applied mathematics and science, engineering and technology in the Republic of Bulgaria. The activities of BGSIAM follow the general objectives of SIAM, as established in its Certificate of Incorporation. The Bulgarian section of SIAM hosts an annual meeting[2]. Since 2007 the following international conferences are held in cooperation with SIAM:

- International Conference "Large-Scale Scientific Computations" (LSSC). The 10th conference was held June 8-12, 2015 in Sozopol, Bulgaria[3].

- Conference of the Euro-American Consortium for Promoting the Application of Mathematics in Technical and Natural Sciences (AMi-TaNS). The seventh conference was held June 28-July 3, 2015 in Albena, Bulgaria[4].

- International Conference "Numerical Methods for Scientific Computations and Advanced Applications", NMSCAA'14[5].

- Seventh International Conference on Numerical Methods and Applications, NM&A'10[6].

During the 10th Annual Meeting of BGSIAM (BGSIAM'15) a wide range of problems concerning recent achievements in the field of industrial and applied mathematics were presented. The conference provided a forum for exchange of ideas between scientists, who develop and study mathematical methods and algorithms, and researchers, who apply them for solving real life problems. Following the traditions, some of the presented topics

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[2] http://www.math.bas.bg/IMIdocs/BGSIAM/annual_meetings.html
[3] http://parallel.bas.bg/Conferences/SciCom15/
[4] http://2015.eac4amitans.eu/
[5] http://parallel.bas.bg/Conferences/nmscaa/
[6] http://www.math.bas.bg/nummeth/nma10/index.html

were: industrial mathematics; scientific computing; numerical methods and algorithms; hierarchical and multilevel methods; high performance computing; partial differential equations and their applications; biomathematics; control and uncertain systems; Monte Carlo and quasi-Monte Carlo methods; neural networks, metaheuristics and genetic algorithms.

More than 60 participants from universities, institutes of the Bulgarian Academy of Sciences and also from outside the traditional academic departments took part in BGSIAM'15. They represented most of the strongest Bulgarian research groups in the field of industrial and applied mathematics. The involvement of younger researchers was especially encouraged.

The scientific program[7] of BGSIAM'15 involved plenary invited talks, contributed talks, and poster session. BGSIAM encourages the organization of special sessions, including young researchers sessions. In 36 talks and 10 posters researchers from Europe (Austria, Bulgaria, Germany, Greece, Ireland, Spain, Sweden, UK), North America and South Africa presented their recent findings at the meeting. The following plenary invited lectures discussed forefront topics in the corresponding fields.

- Tzanio Kolev (Lawrence Livermore National Laboratory, USA), "Scalable High-Order Finite Elements for Compressible Hydrodynamics"

- Johannes Kraus (Universität Duisburg-Essen, Germany), "Optimal multigrid methods for H(div)-conforming discontinuous Galerkin discretizations of the Brinkman problem"

- Maya Neytcheva (Uppsala University, Sweden), "Efficient numerical methods for time evolution processes, described by integro-differential equations"

- Vladimir Veliov (Vienna University of Technology, Austria), "On the method of Kantorovich for non-smooth generalized equations".

The field of biomathematics was represented by the following talks and posters:

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[7]http://www.math.bas.bg/IMIdocs/BGSIAM/docs/bgsiam_2015_program.pdf

- W. Fenz, I. Georgiev, V. Georgieva, Blood Flow Simulations Based on Medical Image Data;

- T. Ivanov, E. Nikolova, Stability Analysis of an Inflated Thin-Walled Hyperelastic Tube with Application to Abdominal Aortic Aneurysms;

- P. Rashkov, Emergence of Drug Resistance in Cancer from the Perspective of Environmental Competition;

- S. Tabakova, N. Nikolov, P. Rajnov, S. Radev, Newtonian and Non-Newtonian Pulsatile Blood Flow In Arteries with Model Aneurysms.

A booklet with the extended abstracts is usually available before the meeting[8]. Proceedings of the presented papers are usually published after the BGSIAM meetings, see [1]–[7]. Proceedings involving refereed papers presented at BGSIAM'15 will be published as a special volume of Studies in Computational Intelligence, Springer.

It was agreed that industry-driven research can generate new and exiting mathematics. Yet many academic-minded scholars have to be convinced in this fact and those working in industry often need to overcome their fear of academic mathematics. BGSIAM will continue promoting the interdisciplinary research via its annual meeting and other activities.

References

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[8]http://www.math.bas.bg/IMIdocs/BGSIAM/docs/

[3] S. Margenov, S. Dimova, A. Slavova (eds), 4th Annual Meeting of the Bulgarian Section of SIAM, BGSIAM'09 Proceedings, 2010, Demetra Ltd., Sofia, Bulgaria. ISSN: 1313-3357

[4] S. Margenov, S. Dimova, A. Slavova (eds), 5th Annual Meeting of the Bulgarian Section of SIAM, BGSIAM'10 Proceedings, 2011, Demetra Ltd., Sofia, Bulgaria. ISSN: 1313-3357

[5] A. Slavova, G. Nikolov, K. Georgiev (eds), 6th Annual Meeting of the Bulgarian Section of SIAM, BGSIAM'11 Proceedings, 2012, Demetra Ltd., Sofia, Bulgaria. ISSN: 1313-3357

[6] A. Slavova, G. Nikolov, K. Georgiev (eds), 7th Annual Meeting of the Bulgarian Section of SIAM, BGSIAM'12 Proceedings, BGSIAM'12, Sofia, Bulgaria. ISSN: 1314-7145

[7] A.Slavova, editor, Mathematics in Industry, Cambridge Scholars Publ., 2014, 412p., ISBN (13) 978-1-4438-6401-5, ISBN (10) 1-4438-6401-3